

TO : The Files (Project 2531)

11 May 1959

FROM:

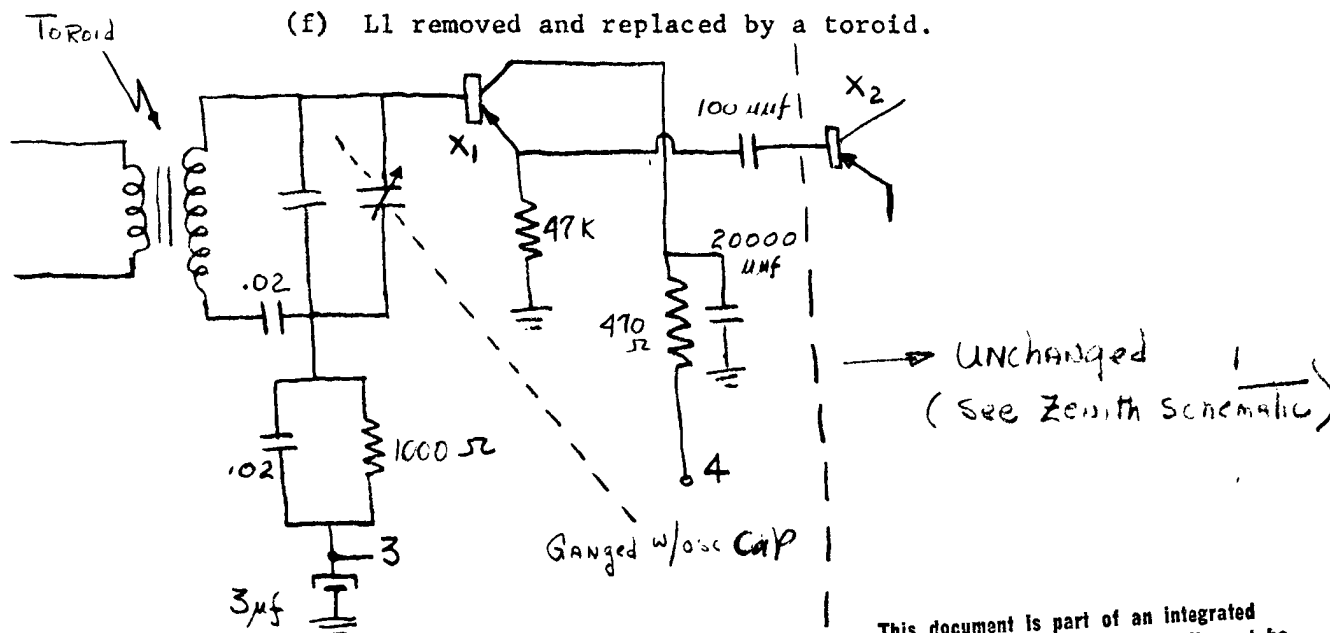
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SUBJ: Modification of Zenith Royal 500D Receiver

1. A brief study was made of the RF and oscillator stages of the Zenith receiver to determine whether it could be converted for operation in the 3 to 6 mc range without the extensive redesign and repackaging necessary in the RR-33.

2. The following changes were made in the receiver. (Refer to the partial schematic of Figure 1 and the schematic for the Zenith Royal 500D which is attached).

- (a) The RF stage was converted to an emitter follower by removing C5, R3, and L2.
- (b) R5 was replaced by a 47K resistor.
- (c) C8 was replaced by a 100 uuf capacitor which was connected back to the emitter of X1.
- (d) 175 turns were removed from the oscillator coil L3.
- (e) The oscillator transistor (2N409) would not oscillate above 4.5 mc. It was replaced by a 2N247.
- (f) L1 removed and replaced by a toroid.



This document is part of an integrated file. If separated from the file it must be subjected to individual systematic review.

FIGURE 1
PARTIAL SCHEMATIC (Showing CKT changes)

3. After making the changes outlined in paragraph 2 the receiver had the following characteristics:

- (a) Frequency Range: 3.67 - 5.84 mc
- (b) Input Impedance: Approximately 50 ohms
- (c) Sensitivity (10 db S/N):

<u>Frequency (MC)</u>	<u>Sensitivity (uv)</u>
3.7	2.2
5.0	2.1
5.8	2.4

- (d) Image Rejection:

<u>Frequency (MC)</u>	<u>Image Rejection (db)</u>
3.7	18
5.0	12
5.8	10

- (e) 455 kc IF Rejection @ 5.8 mc = 45 db.

4. The above results indicate that we will not attain the full 3 to 6 mc coverage without changing the tuning capacitors. Changing the tuning capacitors is likely to involve mounting and packaging problems if the original case is to be retained. The oscillator coil has been coated with a compound which makes the removal of turns tedious. A substitute coil may have to be provided. Otherwise the approach appears feasible providing that the application made of the receiver can tolerate somewhat lower image rejection and resettability than now present in the RR-33.



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